Correspondence

The Editors will be pleased to receive and consider for publication correspondence containing information of interest to physicians or commenting on issues of the day. Letters ordinarily should not exceed 600 words and must be typewritten, double-spaced, and submitted in duplicate (the original typescript and one copy). Authors will be given the opportunity to review the editing of their correspondence before publication.

Late Relapse of Tick-borne Relapsing Fever Following Treatment With Doxycycline

TO THE EDITOR: Tick-borne relapsing fever is contracted during the summer and fall in scattered rural locales throughout the western United States. Most infections are due to *Borrelia hermsii,* which is transmitted by a soft tick, *Ornithodoros hermsii,* that feeds on rodents and commonly infests rodent nests in burrows and abandoned shelters.[1-3] Because *Ornithodoros* ticks usually feed nocturnally for brief 5- to 20-minute periods, actual tick bites are rarely remembered by affected patients.[1] Illness occurs 4 to 18 days following inoculation and is characterized by the sudden onset of fever associated with severe myalgias, arthralgias, and malaise. Untreated patients may suffer repeated relapses of fever and symptoms for weeks to months before the illness resolves. Relapses correlate with changes in the antigenic expression of a specific *Borrelia* coat protein, which enables the spirochete to escape specific host antibody and multiply in the blood.[4,5] When spirochetes cannot be detected in the blood, borreliae may reside in organs such as the spleen, liver, kidneys, and brain, which serve as reservoir sites for future blood-borne relapses of disease.[1,5] Because of its ability to rapidly eliminate blood-borne borreliae, tetracycline (or doxycycline) is considered the drug of choice for treating tick-borne relapsing fever.[6] Therapy for five to ten days is believed sufficient to achieve complete eradication of borreliae and prevent subsequent relapse.[7] We describe the case of a patient who had a documented recurrence of tick-borne relapsing fever five months after treatment with doxycycline.

Report of a Case

In July 1990, a previously healthy 71-year-old male university geology professor was admitted to the University of Washington (Seattle) Medical Center because for three days he had had fever, chills, myalgias, malaise, weakness, and anorexia. While on a geology field trip seven days before admission to hospital, he had slept overnight in a decrepit, abandoned ranch house in a rural area of eastern Washington (Lincoln County). On admission, he was febrile with a temperature of 38°C. Orthostatic hypotension was present. Laboratory studies revealed a hematocrit of 0.42, a leukocyte count of 5.7×10^9 per liter, a platelet count of 67×10^9 per liter, and an erythrocyte sedimentation rate of 78 mm per hour. A blood smear revealed numerous extracellular spirochetes, consistent in morphology with *Borrelia* species. Based on the diagnosis of relapsing fever, a regimen of intravenous doxycycline, 100 mg every 12 hours, was started. After three days of therapy, a follow-up blood smear revealed no spirochetes, and the patient was discharged on oral doxycycline therapy, 100 mg twice a day, to complete a ten-day course of antimicrobial therapy. At a follow-up visit a month later, the patient felt well; laboratory studies revealed a hematocrit of 0.38, a leukocyte count of 4.2×10^9 per liter, and a platelet count of 449×10^9 per liter. The patient said he had complied with the regimen of doxycycline therapy following hospital discharge and remained asymptomatic until December 1990, when fevers, rigors, anorexia, malaise, and myalgias recurred. A blood smear again showed spirochetes consistent with *Borrelia* species, although fewer in number than on the previous smear five months earlier. His symptoms resolved within 24 hours of treatment with oral doxycycline, 100 mg every 12 hours, which was continued to complete a 14-day course of therapy. No subsequent relapses have occurred. He has had no activities in rural areas since his hospital discharge.

Discussion

To our knowledge, this report represents the first documented case of unequivocal relapse of tick-borne borreliosis following currently recommended tetracycline therapy. A previous report suggested relapse of disease in a child after a ten-day course of tetracycline but failed to show recurrence of blood-borne spirochetes.[8] Our review of reports of tick-borne relapsing fever in the English-language literature did not identify another case of relapse following tetracycline therapy.

This report serves to remind physicians that tick-borne relapsing fever remains locally endemic in the western United States. Our experience indicates that currently recommended therapy may not be sufficient to achieve cure in all cases of tick-borne relapsing fever. We suggest that consideration be given to a more prolonged course of tetracycline (or doxycycline) therapy to prevent disease recurrence in severe cases of tick-borne relapsing fever.

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